

WHAT IS CLAIMED IS:

1. An air transporter-conditioner, comprising;
a housing having an inlet and an outlet;
an ion generator that creates an airflow between the inlet and the outlet, including
a first electrode, a second electrode, and a voltage generator coupled between the first and
second electrodes; and
a germicidal lamp exposing the airflow to germicidal radiation, disposed within
the housing so that the lamp is not visible to an individual looking into the inlet or the outlet.

2. The air transporter-conditioner as recited in Claim 1, wherein the first electrode includes
a characteristic selected from a group consisting of (i) a pin-shaped electrode that terminates in
a pointed tip, (ii) a pin-shaped electrode that terminates in a plurality of individual fibers, (iii) a
wire-shaped electrode, (iv) a curved wire-shaped electrode, (v) a coil-shaped electrode, and
(vi) a flat coil-shaped wire.

3. The air transporter-conditioner as recited in Claim 1, wherein the second electrode
includes a characteristic selected from a group consisting of (i) an elongated cylindrical tube, (ii)
an electrode with a U-shaped cross-section, (iii) an electrode with an L-shaped cross-section,
(iv) an electrode with a rod-shaped, and (v) a ring-shaped electrode.

4. The air transporter-conditioner as recited in Claim 1, wherein the second electrode is
downstream from the first electrode, and wherein said first electrode is an ion emitter electrode
and said second electrode is a charged particle collecting electrode.

5. The air-transporter conditioner as recited in Claim 1, wherein the airflow rate passing the
germicidal lamp is slower than the airflow rate exiting the outlet.

6. The air transporter-conditioner as recited in Claim 1, wherein the inlet and the outlet are covered with vertically oriented fins.

7. The air transporter-conditioner as recited in Claim 1, wherein the housing further has an interior surface, the interior surface being a diffusing surface to minimize deflection of the germicidal radiation emitted from the germicidal lamp.

8. The air transporter-conditioner as recited in Claim 1, wherein the air transporter-conditioner further has a shell to redirect the germicidal radiation away from the inlet, and the outlet.

9. The air transporter-conditioner as recited in Claim 1, wherein the second electrode can be removed from the housing for cleaning.

10. An air transporter-conditioner, comprising:
a housing having an inlet and an outlet;
means for creating an airflow between the inlet and the outlet, and further for generating ionized air and ozone;
means for destroying microorganisms in the airflow which is not visible to an individual looking into the inlet or the outlet.

11. An air transporter-conditioner as recited in Claim 10, wherein the means for creating an airflow includes an ion generator having a first electrode, a second electrode and a voltage generator coupled with the first and second electrodes.

12. An air transporter-conditioner as recited in Claim 11, wherein the first electrode includes a characteristic selected from a group consisting of (i) a pin-shaped electrode that terminates in

a pointed tip, (ii) a pin-shaped electrode that terminates in a plurality of individual fibers, and (iii) a wire-shaped electrode, (iv) a curved wire-shaped electrode, (v) a coil-shaped electrode, and (vi) a flat coil-shaped wire.

5 13. An air transporter-conditioner as recited in Claim 11, wherein the second electrode includes a characteristic selected from a group consisting of (i) an elongated cylindrical tube, and (ii) an electrode with a U-shaped cross-section, (iii) an electrode with an L-shaped cross-section, (iv) an electrode with a rod-shape, and (v) a ring-shaped electrode.

10 14. An air transporter-conditioner as recited in Claim 11, wherein the second electrode is downstream of the first electrode; and wherein said first electrode is an ion emitter electrode and said second electrode is a charged particle collecting electrode.

15 15. The air transporter-conditioner as recited in Claim 10, wherein the inlet and the outlet are covered with vertically oriented fins.

16. An air transporter-conditioner, comprising:
a housing having an inlet and an outlet;
an ion generator, that creates an airflow between the inlet and the outlet, including
20 a first surface that emits ions, a second surface that collects charged particles, and a voltage generator coupled between the first and second surfaces;
a germicidal lamp exposing the airflow to germicidal radiation to reduce
micro-organisms in the airflow; and
means for redirecting the germicidal radiation away from the inlet, and the outlet.

25 17. The air transporter-conditioner as recited in Claim 16, wherein the air transporter-conditioner further has means to control the airflow rate.

18. The air transporter-conditioner as recited in 15, wherein the first surface for emitting ions includes a characteristic selected from a group consisting of (i) a pin-shaped electrode that terminates in a pointed tip, (ii) a pin-shaped electrode that terminates in a plurality of individual fibers, and (iii) a wire-shaped electrode, (iv) a curved wire-shaped electrode, (v) a coil-shaped electrode, and (vi) a flat coil-shaped wire.

19. The air transporter-conditioner as recited in Claim 16, wherein the second surface for collecting charged particles includes a characteristic selected from a group consisting of (i) an elongated cylindrical tube, and (ii) an electrode with a U-shaped cross-section, (iii) an electrode with an "L"-shaped cross-section, (iv) an electrode with a rod-shape, and (v) a ring-shaped electrode.

20. The air transporter-conditioner as recited in Claim 16, wherein the second surface is downstream from the first surface.

21. The air transporter-conditioner as recited in Claim 16, wherein the airflow rate passing the germicidal lamp is slower than the airflow rate exiting the outlet.

22. The air transporter-conditioner as recited in Claim 16, wherein the housing further has an interior surface, the interior surface being a diffusing surface to minimize deflection of the germicidal radiation emitted from the germicidal lamp.

23. The air transporter-conditioner as recited in Claim 16, wherein the inlet and the outlet are covered with vertically oriented fins.

24. An air transporter-conditioner, comprising;
a housing having an inlet and an outlet;

an ion generator, that creates an airflow between the inlet and the outlet, including a first surface that emits ions, a removably mounted second surface that collects charged particle, and a voltage generator coupled between the first and second surfaces, the second surface can be removed from the housing for cleaning;

5 a germicidal lamp exposing the airflow to germicidal radiation disposed within the housing; and

means for redirecting the germicidal radiation away from the inlet and the outlet.

10 25. The air transporter-conditioner as recited in Claim 24, including means for removing the second surface for cleaning.

26. The air transporter-conditioner as recited in Claim 24, wherein the second surface is downstream from the first surface.

15 27. An air transporter-conditioner, comprising:

a housing having an inlet and an outlet and a middle portion that is wider than the inlet or the outlet;

20 an ion generator, that creates an airflow between the inlet and the outlet, including a first surface that emits ions, a second surface that collects charged particles, and a voltage generator coupled between the first and second surfaces; and

a germicidal lamp in the middle portion of the housing, in order to exposing the airflow to germicidal radiation with the airflow slower in the middle portion than through the inlet or the outlet.

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28. The air transporter-conditioner as recited in Claim 27, wherein the air transporter-conditioner further has a reflector to redirect the germicidal radiation away from the inlet, and the outlet.

5 29. An air transporter-conditioner, comprising:

a housing having an inlet and an outlet;

an ion generator for creating an airflow, including a first surface that emits ions, a second surface that collects charged particles, and a voltage generator coupled between the first and second surfaces;

10 a germicidal lamp exposing the airflow to germicidal radiation; and

wherein the airflow rate passing the germicidal lamp is slower than the airflow rate exiting the outlet.

30. The air transporter-conditioner of claim 29 including:

15 an airflow control mechanism to manipulate the airflow rate.

31. An air transporter-conditioner, comprising:

a housing having an inlet and an outlet;

20 an ion generator that, when engaged, creates a downstream airflow from the inlet to the outlet, including a first surface that emits ions, a second surface that collects charged particles, and a voltage generator coupled between the first and second surfaces;

a third focus electrode located upstream to the first surface;

a trailing electrode located downstream to the second surface; and

a germicidal lamp exposing the airflow to germicidal radiation.

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32. The air transporter-conditioner of claim 31 wherein said germicidal lamp is located upstream from the third focus electrode.

33. An air transporter-conditioner, comprising:

a housing having an inlet and an outlet;

an ion generator for creating an airflow in a downstream direction, including a first array of electrodes, a second array of electrons, and a high voltage generator coupled
5 between the first and second arrays wherein the second array of electrodes is downstream from the first array of electrodes;

a germicidal lamp located upstream to the first array of electrodes, exposing the airflow to germicidal radiation; and

wherein the airflow rate passing by the germicidal lamp is slower than the airflow
10 rate exiting the outlet.

34. The air transporter-conditioner of claim 33, including:

a third focus electrode located upstream from said first array of electrodes and downstream from said germicidal lamp.

35. An air transporter-conditioner, comprising:

a housing having an inlet and an outlet;

an ion generator that, when energized, creates a downstream airflow, including a first array of electrodes, a second array of electrons, and a high voltage generator coupled
20 between the first and second arrays;

a third focus electrode located upstream to the ion generator;

a trailing electrode downstream from the ion generator;

a germicidal lamp located upstream to the third focus electrode, exposing the airflow to germicidal radiation; and

25 a shell for directing the germicidal light away from the inlet and the outlet.

36. An air transporter-conditioner, comprising:

a housing having an inlet and an outlet;

an ion generator, that creates an airflow between the inlet and the outlet, including a first surface that emits ions, a second surface that collects charged particles, and a voltage generator coupled between the first and second surfaces;

5 a third focus electrode located upstream to the first surface;

a trailing electrode located downstream to the second surface; and

a germicidal lamp located upstream to the third focus electrode, exposing the airflow to germicidal radiation; and

10 a shell at least partially surrounding the germicidal lamp for directing the germicidal radiation away from the inlet and the outlet.

37. An air transporter-conditioner device comprising:

a housing having an air inlet and air outlet;

15 said housing having a mid-section between the air inlet and the air outlet that has a cross-sectional area is larger than the either the air inlet and the air outlet;

an ion generator positioned in said housing, the ion generator having at least a first emitter electrode, and a second collector electrode which is located closer to the air outlet than the first emitter electrode, and said ion generator creating an airflow from the air inlet to the air outlet;

20 a germicidal device located in the housing, which germicidal device can reduce the amount of microorganisms in the air passing through the housing; and

said germicidal device located so as to at least effect the air as the air slows down as the air passed through the mid-section of the housing between the air inlet and the air outlet.

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38. The device of claim 37 wherein:

said germicidal device is a germicidal lamp that emits radiation.

39. The device of claim 37 wherein:
said germicidal device is a germicidal lamp that emits UV radiation.
40. The device of claim 37 wherein:
5 said germicidal device is located at least partially in said mid-section of the housing.
41. The device of claim 37 wherein:
said germicidal device directs radiation across a direction of airflow from the air inlet to
the air outlet.
- 10 42. The device of claim 37 wherein:
said germicidal device is located in a device housing that directs radiation away from the
air inlet and the air outlet.
- 15 43. The device of claim 37 wherein:
said germicidal device is located in a device housing that directs radiation across a
direction of airflow from the air inlet to the air outlet.
- 20 44. The device of claim 37 wherein:
said housing is oval in cross-section; and
said air inlet is located at one end of said oval cross-section and said air outlet is located
at another end of said oval cross-section.
- 25 45. The device of claim 37 wherein:
said housing is elliptical in cross-section; and
said air inlet is located at one end of said elliptical cross-section and said air outlet is
located at another end of said elliptical cross-section.

46. The device of claim 37 wherein:
said housing is egg-shaped in cross-section; and
said air inlet is located at one end of said egg-shaped cross-section and said air outlet
is located at another end of said egg-shaped cross-section.

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47. The device of claim 37 wherein:
said germicidal device is located in a device housing that includes louvers that direct
radiation away from the air inlet and the air outlet.

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48. The device of claim 37 wherein:
said germicidal device is located in a device housing that includes louvers that direct
radiation across a direction of airflow from the air inlet to the air outlet.

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49. The device of claim 37 wherein:
said germicidal device is located between the at least one first emitter electrode and the
air inlet.

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50. The device of claim 37 wherein:
the first emitter electrode is a wire and the second collector electrode is planar collection
surface.

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51. The device of claim 37 wherein:
said housing has side walls located between the air inlet and the air outlet and
said germicidal device is located centrally between the side walls.

52. The device of claim 37 wherein:
said housing has side walls located between the air inlet and the air outlet and

said germicidal device is located adjacent to one of said side walls.

53. The device of claim 37 wherein:

said germicidal device is located in a device housing that has a curved reflector that can
5 focus radiation in a desired direction.

54. The device of claim 37 wherein:

said germicidal device is located in a device housing that has a V-shaped reflector that
can allow radiation in to be emitted in a desired direction.

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55. The device of claim 37 wherein:

said housing, said air inlet, said air outlet, said first emitter electrode and said second
collector electrode, and said germicidal device are elongated.

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56. The device of claim 37 wherein:

said air inlet has air inlet louvers, and said air outlet has air outlet louvers; and
said emitter electrode, said collector electrode, said air inlet louvers, and said air outlet
louvers are all oriented in substantially the same direction.

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57. The device of claim 37 wherein:

said air outlet has air outlet louvers; and
said collector electrode and air outlet louvers are oriented in substantially the same
direction.

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58. The device of claim 37 wherein:

said air outlet has elongated air outlet louvers; and
said second collector electrode are elongated; and

said elongated air outlet louvers and said second elongated collector electrode are oriented in substantially the same direction.

59. The device of claim 37 wherein:

5 said germicidal device emits radiation in order to reduce the amount of microorganisms in the air; and

said germicidal device is positioned in said housing so that any radiation from the germicidal lamp does not exit the housing thorough the air inlet or the air outlet.

10 60. The device of claim 37 wherein:

said germicidal device emits radiation in order to reduce the amount of microorganisms in the air; and

said germicidal device is positioned in said housing so that any radiation from the germicidal lamp does not exit the housing without first bouncing off a surface located in the housing so as to change the wavelength of the radiation.

61. An air transporter-conditioner device comprising:

a housing having an air inlet and air outlet;

said housing having a mid-section between the air inlet and the air outlet, which mid-section has a cross-sectional area is larger than the either the air inlet and the air outlet; an ion generator positioned in said housing, and said ion generator creating an airflow from the air inlet to the air outlet, the airflow slowing down as it passes through the mid-section of the housing;

20 a germicidal device located in the housing, which germicidal device can reduce the amount of microorganisms in the air passing through the housing; and

said germicidal device located so as to at least effect the air as the air slows down as the air passed through the mid-section between the air inlet and the air outlet.

62. The device of claim 61 wherein:
said germicidal device is a germicidal lamp that emits radiation.

5 63. The device of claim 61 wherein:
said germicidal device is a germicidal lamp that emits UV radiation.

64. The device of claim 61 wherein:
said germicidal device is located at least partially in said mid-section of the housing.

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65. The device of claim 61 wherein:
said germicidal device directs radiation across a direction of airflow from the air inlet to
the air outlet.

15 66. The device of claim 61 wherein:
said germicidal device is located in a device housing that directs radiation away from the
air inlet and the air outlet.

20 67. The device of claim 61 wherein:
said germicidal device is located in a device housing that directs radiation across a
direction of airflow from the air inlet to the air outlet.

68. The device of claim 61 wherein:
said housing is oval in cross-section; and
25 said air inlet is located at one end of said oval cross-section and said air outlet is located
at another end of said oval cross-section.

69. The device of claim 61 wherein:
said housing is elliptical in cross-section; and
said air inlet is located at one end of said elliptical cross-section and said air outlet is
located at another end of said elliptical cross-section.

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70. The device of claim 61 wherein:
said housing is egg-shaped in cross-section; and
said air inlet is located at one end of said egg-shaped cross-section and said air outlet
is located at another end of said egg-shaped cross-section.

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71. The device of claim 61 wherein:
said germicidal device is located in a device housing that includes louvers that direct
radiation away from the air inlet and the air outlet.

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72. The device of claim 61 wherein:
said germicidal device is located in a device housing that includes louvers that direct
radiation across a direction of airflow from the air inlet to the air outlet.

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73. The device of claim 61 wherein:
said germicidal device is located between the at least one first emitter electrode and the
air inlet.

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74. The device of claim 61 wherein:
the emitter electrode is a wire and the collector electrode is planar collection surface.

75. The device of claim 61 wherein:
said housing has side walls located between the air inlet and the air outlet and

said germicidal device is located centrally between the side walls.

76. The device of claim 61 wherein:

said housing has side walls located between the air inlet and the air outlet and

5 said germicidal device is located adjacent to one of said side walls.

77. The device of claim 61 wherein:

said germicidal device is located in a device housing that has a curved reflector that can
focus radiation in a desired direction.

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78. The device of claim 61 wherein:

said germicidal device is located in a device housing that has a V-shaped reflector that
can allow radiation in to be emitted in a desired direction.

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79. The device of claim 61 wherein:

said ion generator has a first emitter electrode and a second collector electrode;

said housing, said air inlet, said air outlet, said first emitter electrode and said second
collector electrode, and said germicidal device are elongated.

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80. The device of claim 61 wherein:

said ion generator has a first emitter electrode and a second collector electrode;

said air inlet has air inlet louvers, and said air outlet has air outlet louvers; and

said first emitter electrode, said second collector electrode said air inlet louvers, and said
air outlet louvers are all oriented in substantially the same direction.

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81. The device of claim 61 wherein:

said ion generator has a collector electrode;

said air outlet has air outlet louvers; and
said collector electrode and air outlet louvers are oriented in substantially the same
direction.

5 82. The device of claim 61 wherein:
said ion generator has an elongated collector electrode;
said air outlet has elongated air outlet louvers; and
said elongated air outlet louvers and said elongated collector electrode are oriented in
substantially the same direction.

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83. The device of claim 61 wherein:
said germicidal device emits radiation in order to reduce the amount of microorganisms
in the air; and
said germicidal device is positioned in said housing so that any radiation from the
15 germicidal lamp does not exit the housing thorough the air inlet or the air outlet.

84. The device of claim 61 wherein:
said germicidal device emits radiation in order to reduce the amount of microorganisms
in the air; and
20 said germicidal device is positioned in said housing so that any radiation from the
germicidal lamp does not exit the housing without first bounding off a surface located in the
housing so as to change the wavelength of the radiation.

85. The air transporter-conditioner of claim 1 wherein the ion generator creates a
25 downstream airflow from the first electrode to the second electrode, and including:
a third focus electrode located upstream to the first electrode.

86. The air transporter-conditioner, of claim 1 wherein;
a germicidal lamp directs radiation across a direction of the airflow.

87. The air transporter-conditioner of claim 1 including:
a base pivotally connected with the housing.

88. The air transporter-conditioner of claim 1 wherein said inlet and said outlet are covered with louvers and an individual can look in the inlet and through the housing and out the outlet without seeing the germicidal lamp.

89. The air transporter-conditioner of claim 1 wherein an individual can look in the inlet and through the housing and out the outlet without seeing the germicidal lamp.

90. The air transporter-conditioner of claim 1 wherein said inlet is removably mounted to said housing and said germicidal lamp is removably mounted in said housing so that after said inlet is removed said germicidal lamp can be removed.